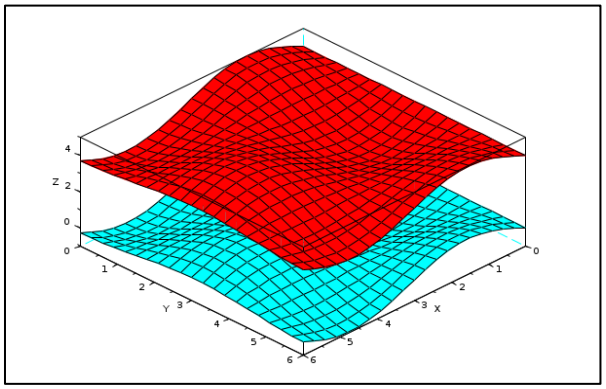
Surface Interpolation:



[Fig. 1, 1] Three-dimensional surface

The module responsible for interpolating surfaces in our program is **SurfaceInt()**, and it does that by taking advantage of a module that we earlier worked on from scratch which is **Surface_Fit_Beta()**. The whole process involves dealing with interpolation as a curve fitting problem in which the number of coefficients in the interpolating surface polynomial is equal to the number of given coordinate points and the problem is solved accordingly to find the coefficients that would lead to a zero regression error for our interpolating polynomial using the fact that a surface polynomial with n coefficients is able to perfectly fit a given data set of n points. By acknowledging that a surface polynomial of degree m may include up to a number of $(m+1)(m+2)(\frac{1}{2})$ terms it's worth to mention that the power of x has precedence over y when it comes to terms that share the same degree in our surface interpolating polynomial.

Inputs:

- The data set $(x\,, y\,, z)$

Outputs:

- The Interpolating polynomial surface

Additional Features:

- A plot involving the best fit of the surface is graphically presented.

V. References

[1] Scilab. *3D Plot Of A Surface*. https://help.scilab.org/docs/5.5.2/en_US/plot3d.html. Accessed 11 June 2020.